

An Essay
on

Inflammation

Respectfully Submitted

To the Faculty of the
Homoeopathic Medical College
of
Pennsylvania

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by
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of
Pennsylvania

Inflammation -

Inflammation is the name applied to a peculiar morbid condition, characterized by increased heat, redness, pain and swelling.

The existence of all these phenomena in any one part, may be considered, sufficient evidence of inflammation in that part, but added to them, is generally an alteration of the secretion, thus constituting a perfect picture of this condition.

In regard to its progress, intensity and mode of termination, inflammation is greatly modified by temperament, age, sex, habit, climate, season, by the nature of the exciting cause, and above all, by the character of the tissues in which it is developed.

The time of life which runs most obnoxious to this disease, is from the first to the tenth year; affections of the cutaneous, mucous and lymphatic systems, being very prevalent at

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The time of life which seems most obnoxious to this disease, is from the first to the tenth year, affections of the cutaneous, mucous and lymphatic systems, being very prevalent at

this period, cause the death of a great number of children.

Inflammation of the arachnoid membrane of the brain is also very common amongst children.

Inflammation of the viscera or internal organs, is comparatively rare before the age of puberty, but from this period forward, inflammation of these organs is by no means unusual, proving a fruitful source of destruction to the human race.

Diseases of the genital organs, are rarely observed before the age of puberty, in fact prior to this period, these structures seem to lie in a dormant state, but when once roused into action, they deeply sympathize with the other viscera, and hence the frequency of organic maladies of the uterus, the ovaries, breasts, and testicles toward the decline of life. The urinary bladder is seldom affected by disease before the age of puberty.

whereas in old age it is subject to numerous maladies.

In reference to sex some organs and tissues are much more liable to inflammation than others. Inflammation of the brain, spleen, heart and arteries, is much more common in males than in females, probably from these organs in the former being more exposed to disturbing influences, both physical and mental, than in the latter. On the other hand the female sex is much more liable to inflammation of the peritonæum, veins, lymphatics &c., than the male.

The seasons of the year in which inflammation is most prevalent are winter and spring, also in moist than in dry situations, and in cold and hot climates than in temperate.

Climate also has an influence upon the textures involved, the lungs, the airpassages, and the fibrous textures, being more liable

to inflammation in cold climates, and the mucus membrane of the large intestines, the liver and skin in tropical regions.

The progress of the disease is subject to various modifications of circumstances, the most important of which, are the nature of the exciting cause, and the structure of the part affected.

As a general rule, the more liberally a part is supplied with vessels and nerves, the more easily it becomes disorganized; thus inflammation of the mucus membrane of the bowels will generally terminate much more rapidly in health or death, than the same disease seated in a fibrous tissue, ligament, or bone.

When an acute inflammation exists for some time and does not terminate in the usual manner, it is said to be chronic, but it is asserted by some authors that it may assume the chronic form from the commencement, as the irritation attendant upon tubercular

deposition &c.

The phenomena of inflammation, as before stated, are redness, heat, pain and swelling, together with an alteration or suspension of the natural secretions of the part.

The redness of an inflamed part may be accounted for by admitting it possible for the capillaries to dilate, and thus admit the passage of a larger amount of red blood, and those which before carried only the colourless part of the blood or serum, becoming under inflammation sufficiently dilated to admit the passage of red blood. Some authors suppose there are new capillaries formed and more blood circulated through the part by that means, but I think the above explanation more reasonable, as the degree of redness varies in different tissues in proportion to the natural supply of red blood which it receives, and likewise on the disposition of the capillaries to dilate under excitement.

The degree of redness from inflammation equally severe, varies greatly in different tissues. The capillaries of the skin are exceedingly numerous and excitable, and therefore when it is inflamed there is a general appearance of redness, the vessels being so crowded together that they are not distinguishable from each other; and the same is found to be the case with the mucous membranes, but when the arachnoid membrane of the brain is inflamed, very little redness is visible, owing to the fact that there is but little red blood circulating through that membrane when it is in its natural condition.

The kind of redness, is owing to the state of the circulating vessels in the inflamed part, or to the consistence of the blood, thus in erysipelas where there is little impediment to the passage of arterial blood into the veins, it gives the skin a bright scarlet colour. Most inflammations of the skin which do not involve the cel-

lular substance underneath, assume more or less the colour of arterial blood. When the colour is more or less purple, or the colour of venous blood, attended with tumefaction and hardness, the circulation is impeded, and consequently the blood is long detained and thereby rendered venous, although still circulating in the arteries. The dusky-brown colour in measles and some other eruptive diseases is probably owing to extravasation.

The increased temperature of an inflamed part, is the circumstance which must have attracted the chief attention of the first observers, as it gave origin to the term inflammation or burning, the redness also being the natural accompaniment of combustion, no doubt contributed to the idea on which the name has been bestowed.

It is believed by modern pathologists, that the heat evolved during inflammation, is not so great as it was formerly supposed to be, although

there is still a great difference of opinion in this respect, some contending that the heat of an inflamed part never exceeds that of the heat and others that it does. The increase of temperature may depend upon two causes, first the dilatation of the capillaries causing an increased circulation through the part, and secondly, upon the increased nervous excitement.

Pain is one of the most important symptoms of inflammation, and by some pathologists is considered the most difficult to explain.

It is ascribed by some to mechanical causes, such as the distention of the vessels, the pressure of the tumor, or tension from the presence of pus, and no doubt all these circumstances tend to aggravate the pain, but it is not likely they produce it, for the same degree of pressure or tension, would not cause pain in a part not inflamed. We might be led to suppose that the nerves in an inflamed part

acquired their sensibility, from the increased quantity of red blood circulating through the part, since it is observed that sensation is much influenced by the quantity of blood which may be either naturally or accidentally sent to an organ. In all parts of the body also where there is much sensibility, there is a copious supply of red blood, as the skin and mucous membrane which are the two sentient surfaces, receive a large quantity of arterial blood, and in proportion as this natural quantity is increased or diminished, the sensibility of the surfaces is augmented or lessened, and when deprived of red blood, as when the fingers become shrivelled from cold and damp, the sensibility of the skin may be quite extinguished. But although it may be admitted that the natural sensibility of a part is in a great measure dependent upon the state of the circulation in the capillaries, still the varieties of pain,

felt in the different tissues when inflamed, cannot be explained upon that principle. These are in a great degree influenced by the character of the inflammation and of the structure of the part inflamed. I think it is reasonable to suppose the nervous filaments themselves are affected or deranged, in what manner it is impossible to say, independently of pressure, although there is no doubt that pressure has a great influence upon the pain, as can be easily ascertained by placing an inflamed part in a depending position, so as to increase it by an accumulation of blood in the part, and the pain will be instantly augmented, whereas if it be again elevated the pain is immediately relieved.

The swelling of an inflamed part varies, according to the causes which give rise to it.

A slight tumefaction is the consequence of the dilatation of the capillaries, and the circulation of more blood in the part than natural, and

this kind of swelling is increased by placing the part in a depending position, but the tumefaction which attracts most attention, is occasioned by the effusion of some of the elements of the blood or the blood itself into the cellular tissue, this latter however might be considered as a consequence, marking the stage of the inflammation, rather than as a phenomena.

The last circumstance, worthy to be classed amongst the phenomena of inflammation, is the change which takes place in the secretions.

These are sometimes increased when the inflammation is slight on secreting surfaces, as may be observed, by slight affections of the mucus and serous surfaces. But when the inflammation increases, the secretions are not only more profuse, but changed in their quality, becoming thicker and sometimes assuming almost the appearance of pus, and when a part situated either internally or externally, becomes

excessively inflamed, all secretion is stopped.

Inflammation may even reach such a high grade that the secretion of pus can no longer take place.

The following may be considered as the effects of inflammation: 1st Adhesion, 2^d Suppuration, 3^d Ulceration, and 4th Gangrene.

Adhesion or adhesive inflammation, is the process by which divided parts become united. Inflammation having a disposition to separate blood into its constituent parts, fibrin is thrown into the cellular membrane and the parts are glued together by it. Some membranes naturally secrete a plastic lymph and are called serous, while others secrete mucus, and thus derive their name. The former in a state of inflammation secrete a fluid which readily becomes organized, and this is the cause of the morbid adhesions so often seen on examining the body of an adult after death. The latter generally

take on ulcerative inflammation, which is one of nature's wise ordinances, for as mucous membranes line the outlets of the body, if they had been prone to adhesive inflammation the outlets would be closed, and life destroyed. Sometimes when inflammation of the mucous membranes is very violent, they may take on adhesive inflammation, and thus close the natural outlets of the body; when such is the case an operation becomes necessary.

Suppuration is the formation of purulent matter from the orifices of the blood vessels, and the fluid so produced is called pus. It is ascertained by authors that pus can never be formed except as the result of inflammatory action. The formation of pus when deep seated can generally be recognized by constitutional symptoms, such as rigors succeeded by heat, attended with quick, hard pulse &c.

Ulceration is the absorption of any constituent part of the body. It is caused by an increased action in the absorbent vessels, produced probably by the pressure caused by inflammation. Ulceration always has a tendency to the nearest external surface, which is a law attended with the most salutary effects, for if this was not the case the body might often be destroyed by the ulcerative process. The process of ulceration is useful to the animal economy in removing foreign substances from the system, also in the exfoliation of portions of bone, which might otherwise remain in the body, perhaps during the life of the individual.

Gangrene may be considered the partial death of the body, or the death of one part, while others retain their natural powers, and is caused by the arteries becoming embolized by excessive action, which destroys their vitality, blood coagulates in them,

circulation is impeded or totally prevented, and gangrene of the part is produced.

The circulation is suspended in the capillaries, sometimes before it ceases in the large arterial trunks, the colour of the skin becomes much darker, assuming a purple-red or livid hue, the sensibility is diminished or there is a sensation of burning experienced, the temperature becomes lessened and a degree of softness or flaccidity can be felt. Absolute gangrene is evinced by a total cessation of the circulation, so that the part will not bleed if cut into, by an entire loss of sensibility, by the colour changing to a black, greyish or livid hue, and by a loss of the natural heat, unless this is kept up by the caloric from the neighbouring parts.

There are other effects of inflammation, such as the deposition of serum and lymph, hemorrhage, softening &c., but these are merely

intermediate stages, in its progress and therefore require no special ^{noting} ~~here~~.

The above stages are considered by many authors as the terminations of inflammation, but strictly speaking inflammation can have but two terminations; namely resolution or spontaneous subsidence, and death.

A brief summary of inflammation is as follows: the first evidences are an unusual redness and heat, with pain and swelling in the part. The secretions are at first increased, then diminished or suspended, and again restored with much alteration. Serum and fibrin are effused with more or less colouring matter of the blood, and sometimes the blood itself with very little alteration.

When the inflammation is completely established, in the centre or focus, there will generally be found effused blood, often coagulated and mixed with vicid serum

at a short distance from the centre, there will be coagulable lymph, of a semi-gelatinous appearance and redish colour, with probably a little blood disseminated in streaks, still further on the fluid is more serous and of a yellowish colour, and at the confines, it will be found colourless. After it has arrived at this stage, if the progress should cease, the redness, heat, pain and swelling begin to abate, and gradually disappear, the effused fluids be absorbed and the parts return to their natural condition, except probably some hardness arising from the effused fibrin becoming organized, the inflammation is said to terminate by resolution, but if the inflammatory action should continue, some of the effects above mentioned will be the consequence, but they can only be considered the effects of inflammation and not the terminations of it.